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# Urology



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**Version 5.3**

Corrected, Updated, Lighter

PLAB 1 Keys is for **PLAB-1** and **UKMLA-AKT** (Based on the New MLA Content-Map)

With the Most Recent Recalls and the UK Guidelines

**ATTENTION:** This file will be updated online on our website frequently!

(example: **Version 2.1** is more recent than **Version 2**, and so on)

Key  
1

## Managing Renal Stones

■ Sudden colicky Pain in loin/flank radiates to groin/ abdomen + nausea, vomiting, hematuria (blood in urine),  $\pm$  rigours

Think  $\rightarrow$  **Ureteric “renal” Stones.**

■ The Investigation of Choice for Ureteric Stones:

$\rightarrow$  **Non-contrast “Spiral” CT scan of KUB “Kidney, ureters, bladder”.**

(CT KUB, not U/S KUB)!

If pregnant woman → **Ultrasound** of KUB.

## **Management → Generally depends on the Stone Size Rule:**

■ If stone size **< 0.5 cm (< 5 mm)** → ↑ **fluid intake** to get rid of it in urine.

■ If stone size **0.5 cm – 2 cm (5-20 mm)** → two options:

✓ **ESWL** (Extracorporeal Shock wave Lithotripsy) “**preferred**”, or:

✓ **[Ureteroscopy]** with **dormia basket**.

“**Ureteroscopy is preferred** over ESWL if the patient has **hydronephrosis**. This is because in ureteroscopy, we can insert JJ stent to relieve ureteric obstruction”.

■ If stone size **> 2 cm (> 20 mm)** → **Percutaneous Nephrolithotomy**.

## **HOWEVER!**

■ If the patient has only **one functioning kidney** (e.g., Hx of the removal of one kidney) and has a stone (**OF ANY SIZE**) with dilatation of the pelvicalyceal system (**PCS**) ± Anuria, Fever [**Obstructive Uropathy**] →

The **INITIAL** thing to do is to **decompress** the **PCS** to **save the remaining kidney**. This is done by → **Percutaneous Nephrostomy**

If Percutaneous nephrostomy is not among the options, pick “**ureteric stent**”. ✓

**We need to drain the urine first to relieve the obstruction and save the AKI.**

■ Similarly, even if the patient has **2 kidneys**, if he develops **AKI** (impaired urea and creatinine), **fever** and **Hydronephrosis** (these together with the presence of **stones** are indicators of **Obstructive Uropathy**), we shall go for (**Percutaneous Nephrostomy**) in order to temporarily and instantly decompress the renal collecting system regardless of the stone size!

■ **Important:**

**What if both Nephrostomy AND Ureteric stenting (JJ stent) are in the options?**

✓ **If BMI is normal** or not given in the stem → **Nephrostomy**.

✓ **If BMI is high** eg, 40 kg/m<sup>2</sup> (the patient is Obese) → **Ureteric stenting**.

This is because percutaneous nephrostomy in Obese patient would be difficult. It is done under interventional radiology (U/S). Due to fat, the clarity of U/S would be reduced. Also, inserting a catheter through big fatty layers is difficult.

Inserting JJ stent (ureteric stenting) would allow the collecting urine to pass down and the peristalsis of ureters to run again and would relieve the obstruction.

This may lead to the stone to be extracted in urine or in many cases it would be followed by ureteroscopy or ESWL “definitive management”.

**Note**, Percutaneous **nephrostomy** is different from Percutaneous **nephrolithotomy**.

- **Percutaneous Nephrostomy** → stoma “catheter” to the Pelvicalyceal system of the kidney for decompression (Draining the obstructed fluid in kidney).
- **Percutaneous Nephrolithotomy** → removal of urinary stone percutaneously via a scope (if size > 2 cm).

### Example (1):

46 YO ♂ with Hx of left nephrectomy 10 days ago presents with fever, inability to pass urine for the last 20 hours. Ultrasound reveals an 8 mm stone in the left lower ureter with dilatation of the pelvicalyceal system. What is the best INITIAL step in management?

- The best initial step → **Percutaneous Nephrostomy**.

The (Stone Size Rule) does not apply here. This patient has **obstructive uropathy** with impending renal failure. We need to, initially, **save his remaining kidney by decompressing the fluid retention in the PCS**. This can be done by → Percutaneous **Nephrostomy**. Afterwards, we can manage the stone based on the stone size role; (ESWL) in this case.

### **In summary:**

- ☐ Loin pain + Stone ± Hydronephrosis → Manage according to the **stone size**.
- ☐ Loin pain + Stone + **Hydronephrosis** [+] **AKI** [+] **Fever**  
→ **Percutaneous Nephrostomy, initially.**

### Example (2):

36 YO ♂ presents with severe loin pain, nausea and vomiting. Ultrasound shows right hydronephrosis. Non-enhancing CT reveals a 3.1 cm stone at the level of the minor calyx. What is the most appropriate management?

- The most appropriate management → **Percutaneous Nephrolithotomy**.

He has **2** working kidneys with **no** obstructive uropathy. According to the “**Stone Size Rule**”, **stone > 2 cm** → **Percutaneous Nephrolithotomy**.

*We hope the concept is clear.*

### Example (3):

A 33 YO man with Hx of urinary stones has suddenly developed severe left loin pain that radiates to the groin, nausea and vomiting. US reveals a 3-mm stone in the renal pelvis.

The most appropriate management → **Advise him to increase fluid intake**.

### Example (4):

A 35 YO man suddenly developed severe left loin pain that radiates to the groin, nausea and vomiting. Renal stone is suspected.

The best modality →

**Non-contrast “Spiral” CT scan of KUB “Kidney, ureters, bladder”**

= **(Non-enhancing CT)**

After Non-enhancing CT, a 3-cm stone was found at the minor calyx.

The most appropriate Rx

→ **Percutaneous nephrolithotomy** (stone is > 2 cm).

### Example (5):

A 44 YO man is brought to the A&E with a few days of severe left flank pain and reduced urine output. He has fever (37.9) and tachycardia (105 bpm). He was put on IV analgesics, fluids and antibiotics. CTKUB shows a 12 mm stone at his left distal ureter and hydronephrosis. His kidney function tests are deteriorating. His WBC and CRP are high. What is the appropriate management?

- A) ESWL (Extracorporeal shock wave lithotripsy).
- B) PCNL “Percutaneous nephrolithotomy”.
- C) Ureteric stenting “JJ stent”.

D) Observation for 2 months.

E) Suprapubic catheter.

✓ Infection + Stone + Hydronephrosis → Decompression is a priority.

✓ Here, Percutaneous nephrostomy is not among the options, thus; decompressing the collecting systems using ureteric stenting is the appropriate answer. → **The valid answer here is → C (Ureteric Stenting).**

✓ Ureteric stenting is a thin tube inserted into the ureter to allow urine drainage from kidneys → decompression. After that, ESWL or cystoscopy can be done as a definitive Rx for the stone.

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### Example (6):

A 46-year-old man is brought to the A&E with a 5-day of severe right groin pain and reduced urine output. He has fever (37.9) and tachycardia (105 bpm). He was put on IV analgesics, fluids and antibiotics. CTKUB shows a 11 mm stone at his left distal ureter and mild hydronephrosis. His kidney function tests are deteriorating. His WBC and CRP are high. What is the appropriate management?

A) ESWL (Extracorporeal shock wave lithotripsy).

B) PCNL "Percutaneous nephrolithotomy".

C) Encourage fluid intake.

D) Ureteroscopy.

E) Suprapubic catheterisation.

- Since he has hydronephrosis, in addition to the stone removal, a JJ stent to relieve the obstruction is needed. (A ureteric stent is not among the options).
- Since the stone's size is between 0.5-2 cm (ie, 5-20 mm), we have 2 options:  
✓ ESWL (option A), and ✓ Ureteroscopy (option D).
- Between the 2 options, "**Ureteroscopy is preferred over ESWL** as the patient has **hydronephrosis**. This is because in ureteroscopy, we can insert JJ stent to keep ureter temporarily open and thus relieve the ureteric obstruction".

So, the answer is → D (Ureteroscopy).

Key  
2

## Unilateral Loin/ Flank Pain

- +ve HCG in urine → suspect **ectopic pregnancy**
- The pain started centrally then went to the right iliac region, + Nausea and vomiting, ± Tenderness and rebound tenderness → **Appendicitis**.
- -ve HCG, the pain radiates from loin to groin ± ↑ WBCs and CRP ± vomiting → **Ureteric Colic** (a stone at the lower part of a ureter).



Ureteric pain is usually severe enough to make a patient writhing and twisting due to severe pain.

Key  
3

### Scrotal Swelling Differentials

**Note**, we gathered everything that is related to scrotal swelling in the following table. Please, study these notes very well and apply them while solving the urology question bank of your choice. **IMPORTANT TABLE**

Condition	Notes
Inguinal hernia	<ul style="list-style-type: none"><li>• Inguinoscrotal swelling; <b>cannot 'get above it'</b> on examination</li><li>• <b>Cough impulse</b> may be present</li><li>• May be <b>reducible</b></li></ul>
Testicular tumours	<ul style="list-style-type: none"><li>• Often discrete testicular nodule (may have associated hydrocele)</li><li>• Symptoms of metastatic disease may be present</li><li>• <b>Ultrasound</b> scrotum and then serum <b>AFP</b> and <b>β HCG</b> required</li></ul>

## Acute epididymo-orchitis

- Often history of **dysuria** -painful micturition-, **pain**, and urethral discharge
- **Scrotal skin** is often red and tender.
- **Fever** may or may not present
- Swelling may be tender and **relieved by elevating the testis (+ve prehn's signs)**.
- Most cases due to **Chlamydia, Gonorrhea (sexually active male)**.
- **The symptoms are gradual if compared to the sudden acute onset of testicular torsion.**
- Often, the affected testis is placed **HIGHER** than the other testis.
- Important part of the investigations → **PCR urethral swab for chlamydia.**
- Rx → **antibiotics**

## Epididymal cyst

- Single or multiple cysts that develop slowly
- May contain clear or **opalescent** fluid (spermatoceles)
- Usually occur over 40 years of age
- **Painless, non-tender**
- **Lies above and behind testis (upper pole, posterior part of testes).**
- It is usually possible to 'get above the lump' on examination
- Do → **Ultrasound "Diagnostic"**

## Hydrocele

- **Non painful**, soft **fluctuant** swelling
- Often possible to 'get above it' on examination
- Usually contain clear fluid
- Will often **transilluminate**
- May be a presenting feature of testicular cancer in young men
- Do → **U/S scrotum.**

## Testicular torsion

- Severe, sudden onset testicular pain
- Risk factors include abnormal testicular lie
- Typically affects adolescents and young males
- On examination testis is tender and pain

The pain in testicular torsion is **NOT** eased by elevation, while in epididymo-orchitis, the pain is relieved by elevating testis.

Also, the pain in testicular torsion is felt at the testicle itself while the pain in epididymo-orchitis is usually confined to the epididymis.

- Hx of similar episodes.
- Examination is intolerable (due to severe pain).
- Urgent Exploratory surgery is indicated, the contra lateral testis should also be fixed

## Varicocele

- Varicosities of the pampiniform plexus
  - Typically occur on left (because left testicular vein drains into renal vein directly at right angle -high pressure-)
  - Often Dull-aching or Dragging pain that is worse after exercise or at the end of the day.
  - described as a “Bag of worms”, bluish, disappear on lying down.
  - May show impulse on cough.
  - May be a presenting feature of renal cell carcinoma (left kidney tumour → occlude the left testicular vein → varicocele).
- ☑ So, sometimes a stem may describe a varicocele along with renal pain and hematuria → choose renal cell carcinoma.

- Affected testis may be smaller and bilateral varicoceles may affect fertility
- Ix → Scrotal doppler ■ US is diagnostic. “not urgent”
- **Reassurance.** Unless infertility or severe pain → surgery.

## Management

- **Testicular malignancy** is always treated with **orchidectomy** via an inguinal approach. Dx “initial” → Ultrasound scrotum.
- **Testicular Torsion** is commonest in young teenagers. The treatment is **urgent surgical exploration** and **testicular fixation**. This can be achieved using sutures or by placement of the testis in a Dartos pouch.
- **Varicoceles** are usually managed **conservatively**. If painless → Reassure. If there are concerns about infertility or persistent severe pain → surgery.
- **Epididymal cysts** can be **excised** using a scrotal approach
- **Hydroceles** are managed differently in **children** where the underlying pathology is a patent processus vaginalis and therefore an **inguinal approach** is used in children so that the **processus can be ligated**.  
  
In **adults**, a **scrotal approach** is preferred and the **hydrocele sac excised or plicated**.
- **Epididymo-orchitis** → Administer **Antibiotics**.

### √ Remember

The major complication of untreated chlamydia “and *N. Gonorrhea*” in **males** is: → (**Epididymo-Orchitis**) or (**Epididymitis**).

→ **Unilateral Testicular Pain.**

The major complication of untreated chlamydia “and *N. Gonorrhea*” in **Females** is: → (**Salpingitis**).

### √ Also, Remember:

One of the features that may be associated Mumps is Orchitis (Not always seen)

• **Orchitis** (4 or 5 days post-parotitis) (**NOT ALWAYS**) → local severe testicular pain and tenderness, Swollen edematous scrotum, impalpable testes.

Key  
4

For anyone with history of renal stones, remember to advise to  
→ **increase fluid intake** (dehydration is a major risk factor for stones).

Key  
5

**Urinary Urgency + Frequency** (urinating a lot) for long-time  
+

**Suprapubic pain** that is worse on bladder filling and relieved after voiding

→ We suspect UTI and send midstream urine for culture.

■ **What if the culture returns Negative?**

→ Suspect **Interstitial Cystitis** (Bladder pain syndrome) “Dx of Exclusion”

■ The next step would be → **Cystoscopy** (Mainly to R/O Bladder Cancer)  
(in 10%, cystoscopy of interstitial cystitis cases shows → **Hunner’s ulcers**).

■ First-line Rx → Bladder training. Avoid pelvic floor exercise (we need pelvic floor relaxation). Avoid triggers like coffee, NSAIDs for pain

■ Second-line Rx → Amitriptyline, Gabapentin.

Key  
6

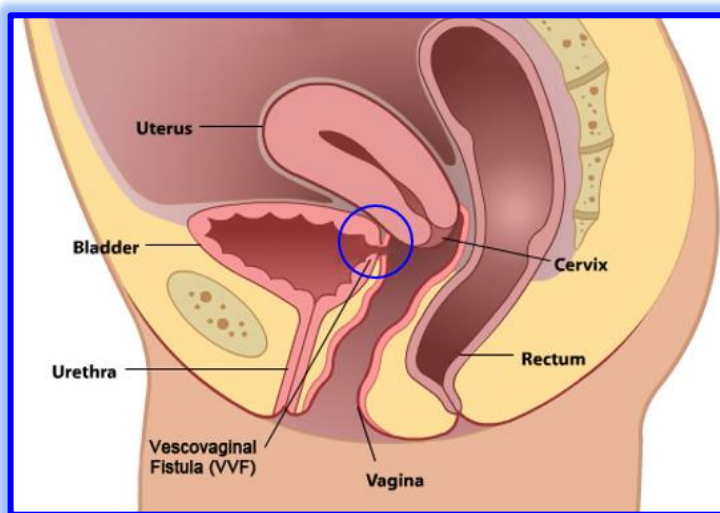
## **Vesicovaginal Fistula**

■ Tract between **Vagina** and Urinary **Bladder**.

■ → Urine discharge from bladder to vagina

“leakage of small amount of clear fluid usually with no distinct odour”

Commonly result **after Gynaecological and Urinary surgeries** (Particularly, **Hysterectomy**). Also, it can occur after **pelvic radiotherapy**.



Diagnosis → **3 Swab Test**

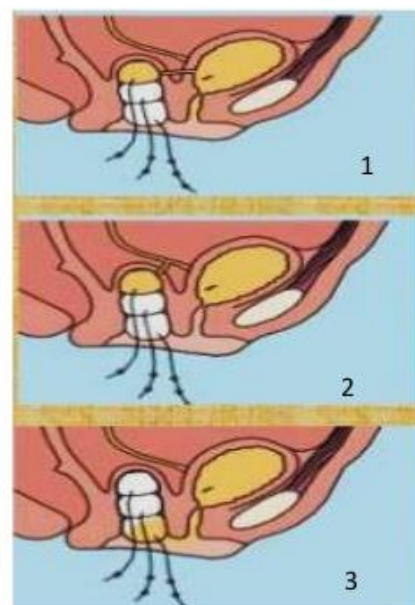
## 3 swab test (Vaginal Gauze test)

- Three separate sponge swabs are placed into the vagina one above the another
- The bladder is then filled with a coloured agent such as **methylene blue** through a rubber catheter, and patient asked to do some exertional maneuvers and then the swabs are removed after 10 mins.



## Result of 3 swab test

1. Discolouration of topmost or middle swab → **vesicovaginal fistula**
2. Uppermost swab wetting but not discolouration → **Ureterovaginal fistula**
3. Discolouration of lower most swab but upper two swabs remain dry → **Urethrovaginal fistula**





**Example:**

A 63 YO woman presents complaining of a 4 months history of continuous leakage of small amounts of urine vaginally. It occurs throughout the day and does not correlate to coughing. She had pelvic radiotherapy 6 months ago for cervical cancer.

- The likely Dx → **Vesicovaginal fistula**.
- to diagnose → **2 swab test**.

Key  
7**Urinary Incontinence Management (Important v)**

**Incontinence** → Involuntary leakage of urine.

**☐ Stress incontinence ✓**

◆ **Leakage** of urine during activity (*sneezing, coughing, laughing*).

◆ The cause → **The bladder outlet is weak** (weak tone) and cannot counteract the raised intra-abdominal pressure during activity.

Also, with multiple vaginal deliveries → **Pelvic floor muscles become weak**.

**☐ Treatment:**

✓ The **initial** Rx of choice → **Pelvic floor exercise** (at least 8 pelvic contractions, 3 times a day, for at least 3 months).

✓ If failed → Surgical **retropubic mid-urethral tape** = (**Free-tension vaginal tape**)

✓ If surgery is not possible → **Duloxetine**.

## ☐ **Urge incontinence (Detrusor Overactivity = Overactive Bladder)** ✓

◆ *Leakage of urine when there is a sensation of need to void.*

*When I feel the desire to pee, I have to go and pee!*

Or:

*When I feel a desire to pee, sometimes I slightly wet myself "Leakage" before making it to the bathroom!*

◆ The cause → **the bladder muscle (Detrusor) is overactive** and thus leads to loss of urine.

### ☐ **Treatment:**

✓ **Bladder drill (Retraining)** → gradually increase the periods between voiding. (for 6 weeks)

✓ If drugs are needed:

→ **Antimuscarinic = Anti-cholinergics** (e.g., immediate release **Oxybutynin**).

Another important antimuscarinic drug to remember → **Tolterodine**.

If there is **arrhythmia** → **Mirabegron** (a beta-3 agonist).

## Key 8 Benign Prostatic Hyperplasia (BPH)

- Benign prostatic hyperplasia (BPH) is a common condition seen in old men.
- BPH typically presents with lower urinary tract symptoms (LUTS), which may be categorised into:
  - ♣ **Voiding symptoms (obstructive):** weak or intermittent urinary flow, straining, hesitancy, terminal dribbling, and incomplete emptying.
  - ♣ **Storage symptoms (irritative):** urgency, frequency, incontinence and nocturia.
  - ♣ **Post-micturition:** dribbling
  - ♣ **Complications:** urinary tract infection, retention, obstructive uropathy
- **DRE "Digital Rectal Examination", the Prostate is:**
  - **Firm, Enlarged, Smooth, Not nodular.**
- **Management of BPH (Benign Prostatic Hyperplasia):**
  - ✓ **Watchful waiting.**
  - ✓ **Medication:**
    - ◆ **First line → Alpha-1 Blockers** (e.g., tamsulosin, doxazosin, alfuzosin).
    - Side-effects → postural hypotension, drowsiness, dyspnoea, dry mouth.

♦ **Second line** → **5 alpha-reductase inhibitors** (e.g., **finasteride**).

Side-effects → erectile dysfunction, ejaculation problems, gynecomastia.

### Important notes on the management of BPH:

- **Tamsulosin (Alpha-1 blocker)** is tried first before finasteride (in general).
- **However, finasteride (5-alpha-reductase inhibitor)** is of choice (used first) if there are lower urinary tract symptoms + **WITH** prostate enlargement (> 30 grams) ± or ↑ PSA > 1.4".

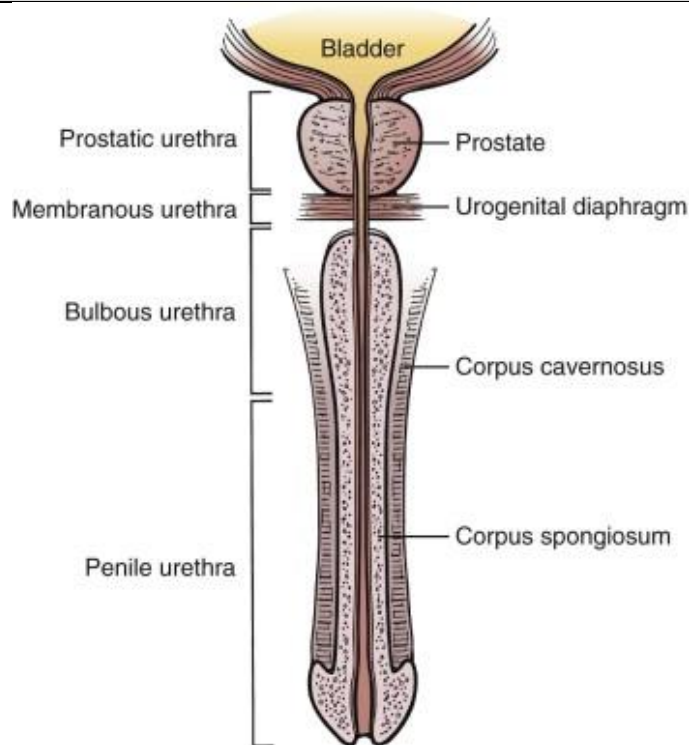
Also, since finasteride can cause erectile dysfunction, they should be avoided if the patient has erectile issues.

✓ **Surgery** → **Transurethral resection of prostate (TURP)**

(**Important**) If there is urinary flow obstruction that has been relieved after inserting catheter, before jumping to surgery

→ **prescribe tamsulosin and refer for Trial WithOut Catheter (TWOC).**

"TWOC needs to be tried for 1-2 days after giving alpha 1 blockers that would relax the smooth muscles of prostate and bladder to see if voiding will happen or further management would be needed".



### Transurethral resection of prostate (TURP) Syndrome:

- ◆ During this operation, **excessive irrigation** is used to allow good visualisation.
- ◆ This fluid can leak inside causing dilutional **Hyponatremia** → **Confusion and Agitation**.

Key  
9

### Prostate Cancer

Prostate cancer is now the **most common cancer in adult males** in **the UK** and is the second most common cause of death due to cancer in men after lung cancer.

## Risk factors

increasing age ■ obesity ■ Afro-Caribbean ethnicity (**usual hint ✓**)  
family history: around 5-10% of cases have a strong family history.

## Features

Early Localised prostate cancer is often asymptomatic.

This is partly because cancers tend to develop in the periphery of the prostate and hence don't cause obstructive symptoms early on.

### Possible features include:

✓ **Bladder outlet obstruction:** **hesitancy**, urinary retention.

Or frequency, urgency "sensation of incomplete urination"

✓ **Haematuria**, haematospermia (locally invasive tumour).

✓ **Pain:** back pain, suprapubic pain, perineal or testicular.

✓ **Weight loss.**

✓ **Digital rectal examination:** **asymmetrical**, **irregular**, **hard**, **nodular** enlargement with loss of median sulcus.

The most appropriate [Next], initial Investigation → **Serum PSA**.

**Multiparametric MRI** is now the **first-line investigation** for people with suspected clinically localised prostate cancer.

The most appropriate **follow up investigation** in prostate cancer

→ **PSA "Prostate Specific Antigen"**.

■ Based on PSA, when to suspect Prostate Cancer?

Age	PSA level (ng/ml)
<b>40-49</b> years	If PSA $\geq$ <b>2.0</b>
<b>50-69</b> years	If PSA $\geq$ <b>3.0</b>
<b>&gt; 70</b> years	If PSA $\geq$ <b>5.0</b>

## Bone metastases in Cancers

Most common tumour causing bone metastases (in descending order):

**Prostate** → **breast** → **lung**

Most common sites of bone metastasis (in descending order):

**Spine** → **pelvis** → **ribs** → **skull** → **long bones**

Other than bone pain, features of bone metastasis may include:

**pathological fractures** ■ **hypercalcaemia "imp v"** ■ **raised ALP** ■ **↑ Thirst**

◆ Remember that Pathological fractures following “Falls” in patient with prostate cancer are commonly due to **2ry Metastasis to Bone**.

### Important Notes:

Local spreading of prostate cancer can invade **ureter** → occluded ureter → **Loin pain** and **Anuria** → **Obstructive Uropathy** (impaired RFTs).

→ **Do Ultrasound of Kidneys, Ureters and Bladder**.

Prostate cancer can metastasise to spine causing → **Cauda Equina Syndrome**  
→ **Perianal/ groin numbness (Saddle Paraesthesia)** | **Inability to initiate voiding “urination”** | **Back pain**.

→ **Urgent MRI of Spine**

### Example (1),

A 75 YO ♂ complains of poor, weak, intermittent urine flow. He also has fatigue and increased thirsty. On DRE “digital rectal examination”, his prostate is firm, smooth, without nodules, and enlarged about 2 finger breadths. His Labs are as follows:

Hb: 12.8 | PSA: 4.4 ng/ml | serum calcium: 2.1 (normal).

**The likely Dx is (Benign Prostatic Hyperplasia BPH or Prostate Cancer)?**



- DRE → **smooth, no nodularity** → goes more with "**BPH**".
- **PSA** in age **> 70** YO that is suspicious of prostate cancer is  $\geq 5$  (Here it is **4.4**) → Goes more with **BPH**.
- Although there is  $\uparrow$  thirst, his **Calcium level is Normal**.

Therefore, the likely diagnosis is → **Benign Prostatic Hyperplasia [BPH]**.

### **Example (2),**

A 70 YO presents with: intermittent, painless hematuria, hesitancy, frequency, difficulty in emptying bladder, lower back and pelvic pain. His PSA is 9.

The likely Dx → **Prostate Cancer**.

✓ Obstructive symptoms due to enlarged prostate.

✓ High PSA for age ( $>5$  for people  $>70$  YO is suspicious)

✓ Low back pain (may be 2ry to bone metastasis) "spine is the commonest site".

### **Example (3),**

A 53 YO man presents to the GP complaining of hesitancy, frequency, dripping over the past year with a recent hematuria. He is a known hypertensive and hyperlipidaemic on medications. His BP is 160/90. His kidney functions tests are slightly disturbed and his (PSA is 4.5). What should be done?

→ **Refer to urology for consideration of Prostate Cancer.**

✓ Obstructive symptoms due to enlarged prostate.

✓ High PSA for age (>3 for people 50-69 YO is suspicious)

✓ + Hematuria

**50-69** years

If PSA  $\geq$  **3.0**

**Example (4),**

A 72 YO African American male presents with Thirst, Fatigue, Frequency, Terminal Dripping, Weight loss, Hypercalcemia.

The likely Dx → **Prostate Cancer.**

Key  
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### Important Comparison

BPH	Prostate Cancer	Bladder Cancer
Elderly + Frequency, urgency, hesitancy, incomplete bladder emptying, dripping.	Elderly + Frequency, urgency, hesitancy, incomplete bladder emptying, dripping.	Middle aged to elderly ♂ or ♀ +  Gross Painless Hematuria

	<p>Normal PSA for age.</p> <p>DRE → Firm, smooth, enlarged prostate (no nodules or irregularity)</p>	<p>Abnormal PSA for age.</p> <p>DRE → Hard, nodular, irregular prostate.</p> <p><b>Other Possible Features:</b></p> <p>Hematuria</p> <p>Low back pain</p> <p>Weight loss</p>	<p>±</p> <p>RFs:</p> <p>✓ Smoking</p> <p>✓ ↑ age</p> <p>✓ Exposure to paints, dyes.</p>
	<p><b>Renal Colic (Stone)</b></p> <p>Sudden severe pain in the loin and radiates to the groin.</p> <p>± Rigours, Fever, Hematuria.</p> <p>± Nausea and Vomiting.</p> <p>A relatively Young Adult.</p> <p><b>Dx → Non-contrast CT scan of KUB “Kidney, ureters, bladder” ✓</b></p>		
Key 11	<p>After abdominal surgery, one of the complications that we should aware of is → <b>Ureteric injury</b> (presents with <b>unilateral flank pain, anuria post-op</b>)</p>		

To investigate it, perform → **Renal Ultrasound**

“A ligation/ injury of ureter during an operation will cause backflow of urine to the kidney and thus Renal hydronephrosis that can be detected by a non-invasive US”.

Other features that may be seen are **fever** and **↑ WBCs** due to infected urine in the obstructed system.

Key  
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Patients with [**Sarcoidosis**] are vulnerable to **Kidney Stones** due to

→ **Hypercalcemia**.

### **Remember, features of sarcoidosis**

**Erythema nodosum**, (Tender, red nodules over shins).

**Bilateral hilar lymphadenopathy**, (the most common finding on Chest X ray)

**Polyarthralgia**

**Hypercalcaemia** ✓

**Fever**.

Key  
13**Testicular cancer**

- ☐ Testicular cancer is the most common malignancy in men aged **20-35 years**.
- ☐ Around 95% of cases of testicular cancer are germ-cell tumours.
- ☐ Germ cell tumours may essentially be divided into:
  - Seminomas
  - Non-seminomas: including embryonal, yolk sac, teratoma and choriocarcinoma.

**☐ Features**

♣ **A painless, non-tender lump within the testis itself that is slowly growing in size in a young man. "important".**

♣ Sometimes, there is a **dragging** sensation. Unlike varicocele, dragging sensation in testicular cancer would **not** be relieved on lying flat.

☐ **Diagnosis** → **Ultrasound of scrotum** is first-line | **Request LDH**

☐ **Suspect testicular cancer in the GP surgery?**

→ **Refer to urology within 2 weeks** (NOT a routine referral)!

**Important Note:**

Hx of **Undescended Testis** (Cryptorchidism) increases the risk of **testicular cancer** by 10 times (Particularly: Seminoma "a germ cell tumor") for which, we request **Lactate Dehydrogenase (LDH)**.

### Example (1),

A 33 YO man presents with left testicular enlargement that has been growing slowly over the past 6 months. O.E, A 4 mm firm, non-tender lump is felt within the body of the left testicle.

The likely Dx → **Testicular Cancer**.

Next step → **Testicular U/S**.

If the patient is in the GP surgery → **2 week wait referral to urology**.

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### Example (2),

A 26 YO man collapsed while playing basketball and was brought to the ED. His history includes shortness of breath for 2 weeks and a surgery (Orchiopexy) for maldescended testes at the age of 4 years. Chest X-ray shows multiple round pulmonary masses.

The likely Dx → **Testicular Cancer**. “Particularly Seminoma -GCT- “

The tumour marker that is likely elevated → **LDH**

**Hints:** Young ages – Hx of maldescended testes – Lung metastasis.

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**Example (3),**

A 34-year-old man presents to the GP complaining of a painless lump in his scrotum. He describes a dragging sensation in his scrotum which does not improve on lying down flat. On examination, there is a palpable mass in the body of the left testis that is slightly larger than a pea in size. What is the most appropriate action?

- A) Reassurance.
- B) Urine culture and microscopy.
- C) Advice to wear support underwear.
- D) 2 week wait referral to urology.
- E) Routine referral to urology.

**Answer → D.**

- This is most likely a case of **testicular cancer** that needs to be **referred to urology within 2 weeks** (not a routine referral).
- Suspect testicular cancer if the mass is felt within the body of the testis itself.
- Testicular cancers are **mostly painless**. However, some may feel a dragging sensation.
- If this was a **varicocele** case, in addition to a dragging sensation, it would be described as a bag of worms. Also, the dragging sensation would be relieved when patient lies down, which is not the case here.

Key  
14**A Quick Reminder****Common Tumour Markers**

<b>Breast Cancer</b>	<b>CA 15-3</b>
<b>Ovarian Cancer</b>	<b>CA 125</b>
<b>Pancreatic Cancer</b>	<b>CA 19-9</b>
<b>Colorectal Cancer</b>	<b>CEA "Carcinoembryonic Antigen"</b>
<b>Prostatic Cancer</b>	<b>PSA "Prostate Specific Antigen"</b>
<b>Liver (HCC)</b>	<b>AFP "Alpha-fetoprotein"</b>
<b>Teratoma (e.g. of testicles, ovaries)</b>	<b>AFP "Alpha-fetoprotein"</b>
<b>Testicular Seminoma</b>	<b>LDH (Lactate Dehydrogenase)</b>

Key  
15**Remember the differences between Epididymo-orchitis and Testicular Torsion:****Epididymo-orchitis**

- Often history of **dysuria** -painful micturition-, **pain**, and urethral discharge.
- **Scrotal skin** is often red (**erythema**) and **tender**.



- **Fever** may or may not be present.
- **Swelling** may be **tender** and **relieved by elevating the testis** (+ve prehn's sign).
- Most cases due to **Chlamydia, Gonorrhea (sexually active male)**.
- **The symptoms are gradual if compared to the sudden acute onset of testicular torsion.**
- **The affected testis is often retracted (higher than the other).**
- Rx → **antibiotics** ✓ imp.

## Testicular torsion

- **Severe, sudden** onset testicular pain.
- Risk factors include abnormal testicular lie.
- Typically affects **adolescents** and **young** males.
- On examination testis is tender and **pain NOT eased by elevation**

**While in epididymo-orchitis, pain is relieved by elevating testis.**

**Also, the pain in testicular torsion is felt at the testicle itself while the pain in epididymo-orchitis is usually confined to the epididymis.**

- **Hx of similar episodes.**
- **Examination is intolerable** (due to **severe pain**).
- **Urgent Exploratory surgery**, the contra lateral testis should also be fixed

Key  
16

**Very Important!**

**Elderly + Hematuria + No other symptoms**

→ Consider **Bladder Cancer** “transitional cell cancer is the commonest type”

→ Flexible **Cystoscopy = Cystourethroscopy**

Others → **CT Urogram** to look for renal and ureteric cancers.

Among other Risk Factors, the greatest risk factor for bladder cancer is

→ **Smoking**

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Above 40 YO + Frank hematuria → **Cystoscopy** + **CT Urogram**.

Below 40 YO + Hematuria (malignancy less likely) → **CT-KUB** “for stones”

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### **Important:**

**After successful treatment of UTI, the persistence of Hematuria is suspicious especially in those > 45 YO even if no risk factors for bladder cancer. Thus,**

→ **Refer the patient for a 2 week wait appointment with urology or nephrology.**

*Cystoscopy might then be done by a urologist.*

*2 weeks wait (urgent not routine). This is the usual in the UK.*

Key  
17

## Autosomal Dominant Polycystic Kidney Disease (ADPKD)

- If a patient presents with **Hematuria** (either microscopic or gross) [+] **HTN** [+] **Loin/Flank Pain.**

→ think of **Adult Polycystic Kidney Disease (ADPKD).** “Important v”

- Remember that **ADPKD** is associated with **Intracranial Aneurysm!** (Important v)


### Example,

A 44 YO ♀ Known cases of Chronic Kidney Disease presents with Hypertension and loin pain. Her father died at the age of 54 due to cerebral aneurysm. What is the likely Investigation that would lead to diagnosis in this lady?

→ **Ultrasound of the Kidneys, Ureters and Bladder.**

- ✓ You supposed to be able to know that this is a case of **ADPKD** as this disease is an **Autosomal dominant** which means that **50%** of children will be affected (Hx of father) and it is often associated with **intracranial aneurysm**.
- ✓ Furthermore, **ADPKD** can lead to progressive **CKD**.
- ✓ The diagnosis is made by **Ultrasound** as it can detect the cysts.

### Important Table

Hematuria + HTN	Polycystic Kidney Disease (ADPKD)	Ultrasound
Hematuria + Hemoptysis	Goodpasture Syndrome	Anti-GBM Abs
Hematuria + Hemoptysis + Nasal/Sinus problems	Wegener's (Granulomatosis with Polyangiitis)	c-ANCA
Hematuria/ Renal function impairment + Bloody diarrhea	Hemolytic Uremic Syndrome (HUS)	<a href="http://www.Plab1keys.com">www.Plab1keys.com</a> 

Key 18    Painless, gross (frank) **hematuria** in an **elderly** man

→ **Bladder cancer** until proven otherwise → do **Cystoscopy** = **Cystourethroscopy**

Key  
19

## **Reflux Nephropathy**

• Urine goes back from bladder to ureters and kidneys (Vesico-Ureteric Reflux) → Dilated Pelvicalyceal system → **Repeated UTIs** → Progressive **Renal Failure**.

• Occurs mainly in the young (**children**).

♦ An important cause → **Congenital abnormality of the insertion of ureters into the urinary bladder** (can be seen on US).

### ♦ **Dx**

✓ **Initial** → **Renal Ultrasound (+) Urinalysis, urine culture and sensitivity**.

✓ **Gold standard** → **Micturating Cystourethrogram**.

✓ **For parenchymal damage** (**cortical scars**) → **Technetium Scan (DMSA)**.

### ♦ **Rx**

✓ **Initially** → **Low-dose antibiotics prophylaxis (trimethoprim) daily**.

✓ **Failed?** Or **Parenchymal damage?** → **Surgery (Ureters Re-implantation)**.

## Important,

If **recurrent UTIs** with **Normal Ultrasounds** and **Normal X-rays**

→ **Cystoscopy** “flexible” “to look for anatomical defects that cannot be seen on US”

Recurrent UTIs is defined as having **2 UTIs** in **6 months** or **3 UTIs** in **12 months**.

## Workup:

- **Mid-stream urine** for microscopy and culture (E. coli is the commonest cause)
- **KUB** “Kidney, ureters, bladder” **X-ray** → to look for radio-opaque renal stones.
- **Ultrasound** of Kidney and Bladder → to look for stones, to look for hydronephrosis, to measure postvoid residual urine volume (PVRV)
- If these are normal, do → **Cystoscopy**. “to identify missed stones or anatomical defect not seen on US, fistulas, neck stricture of bladder or urethra ...etc”.

Key 20	<p><b>Remember,</b></p> <p><b>Sudden colicky Pain in loin radiates to groin, nausea, vomiting, hematuria, ± rigours</b></p> <ul style="list-style-type: none"> <li>• The likely Dx → <b>Ureteric “renal” Stones</b></li> <li>• Ix → <b>Non-contrast “Spiral” CT scan of KUB “Kidney, ureters, bladder”</b> v imp.</li> <li>• Imp: If pregnant (+ve HCG) → <b>U/S of kidney, ureters, bladder (safer in pregnancy).</b></li> </ul> <p><b>Remember,</b></p> <p><b>Spiral CT</b> scan some indications → Ureteric Calculi ■ Pancreatitis ■ Aneurysm</p>
Key 21	<p><b>US</b> → obstruction (e.g. obstructive uropathy – hydronephrosis)</p> <p><b>CT KUB</b> → Stones</p> <p><b>X-ray</b> → Not preferred.</p> <p><b>IVU</b> → obsolete nowadays “not used”</p>

Key  
22

## Prolonged “indwelling” urinary catheter

+

## UTI “Bacterial colonization of the urinary tract”

→ **Bluish (Purple) urine bag syndrome** “bacterial colonisation”

→ **Do Urine Culture**



Patient with **indwelling urinary catheters** should **NOT** receive antibiotic if there are **no symptoms** such as fever, urgency, frequency even if culture was positive for bacteria (e.g. E. coli).

We only should → **Replace the urinary catheter.**



▣ **Asymptomatic bacteria in urine should not be treated in:**

✓ Patients with indwelling catheter.

✓ Non-pregnant female.

✓ Adult male.

Key  
23

**Renal Colic**

+

**Acute Severe episodes of Painful joints** (e.g. Knee, Big toe)

Think of a link??

↑ **Uric Acid (Hyperuricemia)** → Renal stones + Gout 😊

Key  
24

**[Varicocele “Important Points”]**

- Typically affects the left testis.
- Often Dull-aching or Dragging pain that is worse after exercise or at the end of the day.
- described as a “Bag of worms”, bluish, disappear on lying down.

	<ul style="list-style-type: none"> <li>• May show impulse on cough.</li> <li>• A soft scrotal swelling that <u>reduces on lying down</u>, particularly more <u>prominent on one side</u>.</li> <li>• May be a presenting feature of <u>renal cell carcinoma</u> (left kidney tumour → occlude the left testicular vein → varicocele).</li> <li>♣ So, sometimes a stem may describe a varicocele along with renal pain and hematuria → choose renal cell carcinoma.</li> <li>• Ix → Scrotal doppler ■ US is diagnostic. “Not urgent”.</li> <li>• Varicoceles are usually managed conservatively.</li> </ul> <p>✓ If painless → Reassure.</p> <p>✓ If there are concerns about testicular function of infertility or persistent severe pain → surgery.</p>
Key 25	<p><b>PSA “Prostate Specific Antigen)</b></p> <p>Not specific for Prostate cancer as it may raise in other conditions such as BPH, Prostatitis, UTI and after ejaculation, exercise and DRE.</p> <p>Advice to <b>avoid ejaculation and exercise 48 hours before serum PSA test.</b></p>
Key 26	<p>Frequency, Urgency, Dysuria, <u>Hematuria</u>, <u>Suprapubic pain</u>, Fever, Nitrates and Leucocytes on Dipstick</p> <p>→ <b>Cystitis</b> (Urinary bladder inflammation, mainly due to infection with <b>E. Coli</b>)</p>

Key 27	<p><b>Painless hematuria in an elderly man with no other symptoms</b></p> <p>Initial investigation = <b>Cystoscopy</b></p>
Key 28	<p><b>Painless, non-tender swelling lies above and behind testis</b></p> <p>→ <b>epididymal cyst.</b></p>
Key 29	<p><b>Urethritis complication in men</b></p> <p>→ <b>epididymitis.</b></p> <hr/> <p>√ <b>Remember</b></p> <p>The major complication of <b>untreated chlamydia</b> “and <i>N. Gonorrhea</i>” in <b>males</b> is: → (<b>Epididymo-Orchitis</b>) or (<b>Epididymitis</b>).</p> <p>→ <b>Unilateral Testicular Pain.</b></p> <p>The major complication of untreated chlamydia “and <i>N. Gonorrhea</i>” in <b>Females</b> is: → (<b>Salpingitis = PID</b>).</p>
Key 30	<p><b>A young footballer male presents with severe testicular pain that is not relieved by elevating the testis.</b></p>

→ **Urgent surgical exploration** (likely **testicular torsion**).

**Remember the differences between Epididymo-orchitis and Testicular Torsion:**

### **Epididymo-orchitis**

- Often history of **dysuria** -painful micturition-, **pain**, and urethral discharge
- **Scrotal skin** is often red and tender.
- **Fever** may present
- Swelling may be tender and **relieved by elevating the testis** (+ve prehn's signs)
- Most cases due to **Chlamydia** (sexually active male).
- **The symptoms are gradual** if compared to the sudden acute onset of testicular torsion.
- **The affected testis is often retracted** (higher than the other).
- Rx → antibiotics

### **Testicular torsion**

- **Severe, sudden** onset testicular pain
- Risk factors include abnormal testicular lie
- Typically affects **adolescents** and **young** males
- On examination testis is tender and **pain** **NOT** eased by elevation

**While in epididymo-orchitis, pain is relieved by elevating testis.**

- **Hx of similar episodes.**
- **Examination is intolerable** (due to **severe pain**).
- **Urgent Exploratory surgery**, the contra lateral testis should also be fixed

Key  
31

**A 62 YO man with benign prostatic hyperplasia underwent TURP (Transurethral resection of the prostate). What is the likely electrolyte abnormality to develop?**

→ **Hyponatremia.**

### **Transurethral resection of prostate (TURP) Syndrome:**

◆ During this operation, **excessive irrigation** is used to allow good visualisation.

◆ This fluid can leak inside causing dilutional **Hyponatremia**

→ **Confusion** and **Agitation.**

Key  
32

**A boy came with tender, swollen and hot testis. The affected testis is a bit retracted (higher than the other)**

→ **Acute epididymo-orchitis.**

**Acute epididymo-orchitis**

- Often history of **dysuria** -painful micturition-, **pain**, and urethral discharge
- **Scrotal skin** is often red and tender.
- **Fever** may present
- Swelling may be tender and **relieved by elevating the testis (+ve prehn's sign)**
- Most cases due to **Chlamydia (sexually active male).**
- **The symptoms are gradual if compared to the sudden acute onset of testicular torsion.**
- Often, the affected testis is placed **HIGHER** than the other testis.
- Rx → **antibiotics**

**Key 33 A 35 YO man suddenly developed severe left loin pain that radiates to the groin, nausea and vomiting. Renal stone is suspected.**

The best modality → (**Non contrast CT**).

**Non-contrast "Spiral" CT scan of KUB "Kidney, ureters, bladder"**

= (**Non-enhancing CT**)

Key 34	<p><b>A female presents with dysuria, loin pain and rigors.</b></p> <p>Likely → <b>acute pyelonephritis.</b></p> <p>Initial investigation → <b>urinalysis.</b></p> <p>Then → <b>urine culture.</b></p>
Key 35	<p><b>Very Important!</b></p> <p><b>Elderly + Hematuria + No other symptoms</b></p> <p>→ Consider <b>Bladder Cancer</b> “transitional cell cancer is the commonest type”</p> <p>→ <b>Flexible Cystoscopy</b></p> <p>Among all other Risk Factors, the <b>greatest risk factor for bladder cancer</b> is</p> <p>→ <b>Smoking</b></p>

Above 40 YO + Frank hematuria → Cystoscopy

Below 40 YO + Hematuria (malignancy less likely) → CT-KUB “for stones”

### Recent exam Q:

After successful treatment of UTI, the persistence of Hematuria is suspicious especially in those > 45 YO even if no risk factors for bladder cancer. Thus,

→ **Refer the patient for a 2 week wait appointment with urology or nephrology.**

*Cystoscopy might then be done by a urologist.*

*2 weeks wait (urgent not routine). This is the usual in the UK.*

**Key 36** ■ A 50 YO man with dysuria and hematuria. Treated with nitrofurantoin. Presents again complaining of persistent hematuria but the dysuria has subsided.



■ After successful treatment of UTI, the persistence of Hematuria is suspicious especially in those > 45 YO even if no risk factors for bladder cancer. Thus,

→ Refer the patient for a 2 week wait appointment with urology or nephrology.

*Cystoscopy might then be done by a urologist.*

*2 weeks wait (urgent not routine). This is the usual in the UK.*

Key 37 ■ Prolonged "indwelling" urinary catheter

+

→ Bluish (Purple) urine bag colour

+

No UTI symptoms but urine dipstick shows 1+ protein, 1+ RBCs, -ve nitrates

The best investigation → Urine Culture

Key 38 ■ Testis cancer → order LDH (lactate dehydrogenase)

Key 39 ■ Small renal stones (<5 mm) → Encourage to ↑ fluid intake.

Key 40 ■ Hx of **Undescended Testis** (Cryptorchidism) increases the risk of **testicular cancer** by 10 times (Particularly: Seminoma “a germ cell tumor”) for which, we order Lactate Dehydrogenase (**LDH**).

Key 41 ■ A 45 YO female heads to the bathroom whenever she has a desire to pee. She also has frequency.

→ **Detrusor overactivity** (Urge incontinence).

**Remember:**

## Urinary Incontinence Management (Important v)

**Incontinence** → Involuntary leakage of urine.

### ■ **Stress incontinence** ✓

◆ **Leakage** of urine during activity (*sneezing, coughing, laughing*).

◆ The cause → **The bladder outlet is weak** (weak tone) and cannot counteract the raised intra-abdominal pressure during activity.

Also, with multiple vaginal deliveries → **Pelvic floor muscles become weak**.

□ **Treatment:**

✓ The **initial** Rx of choice → **Pelvic floor exercise**

(at least 8 pelvic contractions, 3 times a day, for at least 3 months).

✓ If failed → Surgical **retropubic mid-urethral tape** = (**Free-tension vaginal tape**)

✓ If surgery is not possible → **Duloxetine**.

## ☐ **Urge incontinence (Detrusor Overactivity)** ✓

◆ *Leakage of urine when there is a sensation of need to void.*

*When I feel the desire to pee, I have to go and pee!*

Or:

*When I feel a desire to pee, sometimes I slightly wet myself "Leakage" before making it to the bathroom!*

◆ The cause → **the bladder muscle (Detrusor) is overactive** and thus leads to loss of urine.

### ☐ **Treatment:**

✓ **Bladder drill (Retraining)** → gradually increase the periods between voiding. (for 6 weeks)

✓ If drugs are needed → **Antimuscarinic**.

(eg, immediate release **Oxybutynin**, **Tolterodine**).

✓ If the patient is old and has arrhythmias/ heart conditions → **Mirabegron**.

Key 42	<p>A female patient with UTI was treated with amoxicillin but the condition has not improved.</p> <p>→ <b>Urine culture and sensitivity</b></p> <p>“to detect the exact causative organism and then commence an appropriate antibiotic this time”.</p>
Key 43	<p>■ A scrotal swelling investigation → <b>Ultrasound</b></p>
Key 44	<p><b>A man who just had surgery a few hours ago. Urine bag is not draining. Vitals are stable. What to do next?</b></p> <p>a) <b>Check the catheter for blockage.</b></p> <p>b) Exploratory laparotomy.</p> <p>c) Give furosemide.</p> <p>D) Fluid challenge.</p>
Key 45	<p><b>62yr old man presented with increased urinary frequency, urge incontinence and dribbling. PSA is 4.5ng/ml. Digital examination reveals large,</b></p>

**symmetrical and soft prostate. What is the mechanism of action of the initial drug of choice for treatment?**

- a) Alpha-adrenoceptor blockade
- b) **5 alpha reductase inhibitors**
- c) GNRH agonist

♦ **5 alpha-reductase inhibitors** (e.g. finasteride). **“of choice if there are lower urinary tract symptoms + WITH prostate enlargement + WITH ↑ PSA”.**

**All these are found in this patient, thus, the correct answer is B.**

- Benign prostatic hyperplasia (BPH) is a common condition seen in old men.
- BPH typically presents with lower urinary tract symptoms (LUTS), which may be categorised into:

♣ **Voiding symptoms (obstructive):** weak or intermittent urinary flow, straining, hesitancy, terminal dribbling and incomplete emptying

♣ **Storage symptoms (irritative):** urgency, frequency, incontinence and nocturia

♣ **Post-micturition:** dribbling

**DRE “Digital Rectal Examination” → Symmetrically enlarged, Smooth, Not nodular prostate.**

■ **Management options**

✓ **Watchful waiting.**

✓ **Medication:**

◆ **5 alpha-reductase inhibitors** (e.g. finasteride). **“of choice if there are lower urinary tract symptoms + WITH prostate enlargement + WITH ↑ PSA”.**

◆ **Alpha-1 Blockers** (e.g. tamsulosin, doxazocin, alfuzosin), **“of choice if there are lower urinary tract symptoms only WITHOUT significant prostate enlargement”.**

▣ **Side-effects of alpha blockers:**

**postural hypotension, drowsiness, dyspnoea, cough**

✓ **Surgery** → **transurethral resection of prostate (TURP)**

(imp. TURP is associated with **hyponatremia**)

**Key 46** A young aged Rugby player presented with severe, sudden onset of testicular pain, testis is tender and the pain is not relieved on raising the testes. Management?

A. IV antibiotics

B. **Urgent referral to Surgeon**

**This is a case of testicular torsion that needs urgent surgical exploration.**

**Key 47** 69 yr old man presents with dysuria, flank pain and fever. He has had prostate cancer for 10 years. What is the investigation of choice?

A) **Urine Culture and sensitivity**

B) Serum acid phosphatase

C) serum PSA

D) Serum Calcium

E) Blood culture

♦ The most common causative organism of **UTI** → **E. coli** (Gram -ve)

• **Acute pyelonephritis** → **Urine Culture** → Then **Start Antibiotics**.

• **Upper UTI** → Ciprofloxacin (or) Co-amoxiclav.

• **Lower UTI** → Trimethoprim (or) Nitrofurantoin.

**Key 48** After successful treatment of UTI, the persistence of Hematuria is suspicious especially in those > 45 YO even if no risk factors for bladder cancer. Thus,

→ **Refer the patient for a 2 week wait appointment with urology or nephrology.**

*Cystoscopy might then be done by a urologist.*

*2 weeks wait (urgent not routine). This is the usual in the UK.*

✓ Above 40 YO + Frank hematuria → Cystoscopy

✓ Below 40 YO + Hematuria (malignancy less likely) → CT-KUB “for stones”.

Key  
49

- Hematuria < 40 YO → do US followed by **CT scan** (likely stone).
- Hematuria > 40 YO → do **Cystoscopy** (likely bladder cancer).

Key  
50

The initial investigation for UTI → **Dipstick urine analysis**.

Key  
51

A boy was kicked in his scrotum a few hours ago. He is now pain-free, with no swelling but with mild tenderness over the right scrotum.

→ **Reassure**.

■ **After a few hours of scrotum trauma:**

✓ If no pain anymore, no swelling → **Reassure**.



✓ If there is still ongoing pain, swelling, pain on elevating the scrotum  
→ [refer for surgical exploration](#) (fear of testicular torsion).

Key  
52

## Acute bacterial prostatitis

- ▣ Acute bacterial prostatitis is typically caused by gram-negative bacteria entering the prostate gland via the urethra.
- ▣ Escherichia coli is the most commonly isolated pathogen.
- ▣ Risk factors for acute bacterial prostatitis include recent urinary tract infection, urogenital instrumentation, intermittent bladder catheterisation and recent prostate biopsy.

### ▣ Features:

- the **pain** of prostatitis may be referred to a variety of areas including the perineum, penis, **rectum** or **back**.
- obstructive voiding symptoms may be present.
- fever and rigors may be present.
- **Suprapubic tenderness** may be present.
- digital rectal examination: **tender, boggy prostate gland**.

### ▣ Management:

- Clinical Knowledge Summaries currently recommend a 14-day course of a **Quinolone e.g. ciprofloxacin, ofloxacin**. [These should be started empirically without the need to wait for culture results.](#)
- consider screening for sexually transmitted infections.

**Example:**

A 55 YO man presents complaining of low back pain on urination over the past week. There is also Increased urinary frequency. O/E: there is suprapubic tenderness. Per-rectal examination detects tender prostate. Midstream urine is sent for culture and sensitivity. What should be done next?

The likely Dx → **Prostatitis**. “see the features above”.

The next step in management → Start **quinolones such as Ofloxacin**.

No need to wait for the culture and sensitivity results.

**Key 53** ■ Above 40 YO + Frank (macroscopic) hematuria

→ **Cystoscopy** to look for bladder cancer. **Imp. ✓**

+ **CT KUP “or CT Urogram”** to look for ureteric and renal cancers. **Imp. ✓**

“If cancer is suspected and no cystoscopy in the options, pick **CT KUB**”

KUB = Kidney, ureters, bladders.

■ Below 40 YO + Hematuria (malignancy less likely) → **CT-KUB** “for stones”

Key 54	<p><b>Important Notes:</b></p> <p>In the case of enlarged prostate:</p> <p>If there is urinary flow obstruction that has been relieved after inserting catheter, before jumping to surgery</p> <p>→ <b>prescribe tamsulosin and refer for Trial WithOut Catheter (TWOC).</b></p> <p>“TWOC needs to be tried for 1-2 days after giving alpha 1 blockers that would relax the smooth muscles of prostate and bladder to see if voiding will happen or further management would be needed”.</p>
Key 55	<p><b>Recurrent UTIs in “<u>postmenopausal</u>” women with no other abnormalities</b></p> <p><b>Rx → <b>Vaginal Oestrogen.</b></b> “Tried first v in postmenopausal women because of the risk of antibiotic resistance”.</p> <p><b>If failed → Long-term antibiotic prophylaxis.</b></p> <p>“It is proposed that oestrogen can restore the normal premenopausal vaginal flora and acidic pH, and can improve urogenital atrophy, prolapse and cystocele. Thus, it can help reduce urinary tract infection episodes in postmenopausal women”.</p>
Key 56	<p><b>Recurrent UTIs in “<u>premenopausal = still menstruating</u>” women with no other abnormalities</b></p> <p><b>Rx → <b>Long-term antibiotic prophylaxis.</b></b></p>

Key 57	<p>A 63 YO man has difficulty passing urine, dripping, suprapubic pain for the past few weeks. On insertion a urine catheter, his pain got improved immediately.</p> <p>→ <b>Prescribe tamsulosin and refer for trial without catheter (TWOC).</b></p>
Key 58	<p>Painless <u>firm</u> testicular enlargement (slowly growing) in young age is suggestive of testicular cancer and the <u>first</u> step is → <b>Ultrasound of testes</b>.</p> <p>(The mass is within the testis not in the scrotum. It is firm. Slowly growing)</p>
Key 59	<p>Painful micturition, polyuria, Hx of pyelonephritis, nitrates in urine analysis, no other symptoms.</p> <p>Suspect → <b>Lower UTI</b></p> <p>→ <b>Mid-stream urine microscopy, culture and sensitivity.</b></p> <p>Antibiotics can be started before the results of the cultures. If the results show resistance to the antibiotics prescribed, the GP would call the patient to modify the antibiotics accordingly.</p>
Key 60	<p><b>Sudden colicky Pain in loin radiates to groin, nausea, vomiting, hematuria, ± rigours</b></p> <p>• The likely Dx → <b>Ureteric “renal” Stones</b></p>

	<ul style="list-style-type: none"> <li>• Ix → <b>Non-contrast “Spiral” CT scan of KUB “Kidney, ureters, bladder”</b> v imp.</li> <li>• Imp: If pregnant (+ve HCG) → <b>U/S of kidney, ureters, bladder (safer in pregnancy)</b>.</li> </ul>
Key 61	<p><b>Non-tender cystic large swelling of scrotum that transilluminates</b></p> <p>Think → <b>Hydrocele</b>.</p> <p>Do → <b>Ultrasound scrotum</b>.</p>
Key 62	<p><b>A young man presents with 4 days Hx of gradually worsening scrotal pain. There is mild erythema on the affected side. There is tenderness on palpating the scrotum. He is sexually active with a new partner. He is fully immunized. He denies fever or urethral discharge.</b></p> <p>Think → <b>epididymo-orchitis</b>.</p> <p>Important part of the investigation → <b>PCR urethral swab for chlamydia</b>.</p> <p>“Fever and urethral discharge may or may not present in epididymo-orchitis”.</p>
Key 63	<p><b>Ureteric stone (severe flank pain, ↓ urine output)</b></p> <p><b>+ Fever</b></p> <p><b>+ CT-KUB showing Hydronephrosis</b></p> <p><b>+ Acute kidney injury (↑ urea, ↑ creatinine)</b></p>

- This patient has **obstructive uropathy** (manifested by a ureteric stone that had led to hydronephrosis -as mentioned → that has led to acute kidney injury -high serum urea and creatinine).

→ Next step would be to decompress this obstructive uropathy, relieve pain and resolve the AKI.

- This is done urgently by either **percutaneous nephrostomy** or **JJ ureteric stent**.

*“Be careful, percutaneous nephrostomy is different from percutaneous nephrolithotomy”.*

### 🔴 Important:

What if both **Nephrostomy** AND **Ureteric stenting (JJ stent)** are in the options?

✓ If **BMI is normal** or not given in the stem → **Nephrostomy**.

✓ If **BMI is high** eg, 40 kg/m<sup>2</sup> (the patient is Obese) → **Ureteric stenting**.

After relieving the obstruction, the definitive management is done by:

- ESWL or ureteroscopy with YAG laser/ or with dormia (if stone is 0.5-2 cm).
- Percutaneous Nephrolithotomy (if stone is > 2 cm).

---

If the stone is small < **0.5 cm** and no hydronephrosis or AKI

→ Advice patient to **increase fluid intake** (likely that stone would pass).

Key 64	<p>A 20 YO presents complaining of 3 hours of left scrotal pain and swelling. He has been having intermittent testicular pain over the past 3 months. He has been having sexual intercourse with his partner over the past 4 months. No Hx of trauma, fever, or urethral discharge. He is fully vaccinated. O/E, the posterior scrotal skin is tender, with mild erythema and swelling.</p> <p>The most likely Dx → <b>Epididymo-orchitis</b>.</p> <p>The best management → <b>Prescribe antibiotics</b>.</p>
Key 65	<p>A 34-year-old man presents to the ER complaining of severe colicky pain on his right flank. He is rolling in bed because of the pain. His urinalysis shows 2+ blood. He is also vomiting.</p> <ul style="list-style-type: none"> <li>• The likely Dx → <b>Kidney stones</b>.</li> <li>• The most appropriate investigation → <b>CT scan WITHOUT contrast (CT KUB)</b>.</li> <li>• The likely diagnosis here is <b>kidney stones</b> which requires <b>CT KUB</b> (CT of kidney, ureter and bladder). CT KUB is CT <b>without</b> contrast.</li> <li>• CT with contrast can also detect the stones but it takes a longer time and exposes the patient to more unnecessary radiation.</li> </ul>
Key 66	<p>• The greatest risk factor for <b>transitional cell carcinoma of the bladder</b> is → <b>Smoking</b> (3 times more common in smokers than non-smokers).</p>

- This is followed by → **Age** (90% are > 55 years old).

Key  
67

### Important 3 Scenarios to compare 3 Different Diagnoses

#### Scenario (1):

47 YO, presents with frank hematuria of one day. He has been having a worsening right-sided back pain for 3 months. His urinalysis shows 3+ blood. He is non-smoker, no weight loss, no palpable abdominal masses, no fever.

The most likely Dx → **Renal stone**.

Not old age + unilateral flank or back pain + hematuria

Think → renal stones. (Painful hematuria, unilateral → likely stones).

#### Scenario (2):

62 YO man presents with gross (frank) hematuria, no pain or other symptoms, he is a smoker.

**Painless, gross (frank) hematuria** in an **elderly** man

→ **Bladder cancer** until proven otherwise → do **Cystoscopy** = **Cystourethroscopy**

The major risk factor for bladder cancer is smoking.



**Scenario (3):**

A 70 YO presents with: intermittent, painless hematuria, hesitancy, frequency, difficulty in emptying bladder, lower back and pelvic pain. His PSA is 9.

The likely Dx → **Prostate Cancer**.

✓ He is **Old** +

✓ **Obstructive symptoms** (eg, hesitancy, urgency) due to enlarged prostate.

✓ High PSA for age (>5 for people >70 YO is suspicious).

✓ Low back pain (may be 2ry to bone metastasis)

“Spine is the commonest site”

**Key 68** **A Tricky Scenario:**

A 73-year-old woman is using oxybutynin for her urge incontinence. She developed urinary urgency and frequency in the last 3 days. She micturates small amounts of urine. Her abdominal examination is unremarkable. What is the most appropriate next step in management?

A) Nitrofurantoin.

B) Refer to urinary consultant.

C) Supervised bladder training.

D) Ultrasound of bladder.

E) Pelvic floor exercise.

- She has recent urinary frequency and urgency.
- These are common symptoms of urinary tract infection (UTI).
- Thus, give → **nitrofurantoin**.

She also has urge incontinence that is being controlled by Antimuscarinic = Anti-cholinergic (oxybutynin). So, bladder training should have been tried first before oxybutynin. Thus, it is not the valid answer.

Key  
69

A 58-year-old man presents to the GP surgery because he has to void more often and each time, he finds it difficult to initiate voiding and he needs to strain a lot. Each time he passes small amounts. He wakes up in the middle of the night. On digital rectal examination, he has an enlarged, smooth, not nodular prostate.

- **The most likely Dx** → **Benign prostatic hyperplasia** (Frequency, Straining, smooth enlarged not nodular prostate...etc).
- **The most appropriate management** → **Alpha-blocker (eg, tamsulosin)**.

## ■ Management of BBH (Benign Prostatic Hyperplasia):

√ Watchful waiting.

√ Medication:

◆ **FIRST LINE** → **Alpha-1 Blockers** (e.g., tamsulosin, doxazocin, alfuzosin).

◆ **5 alpha-reductase inhibitors** (e.g., finasteride).

Side-effects of alpha blockers: postural hypotension, drowsiness, dyspnoea, cough

**Important:**

Tamsulosin (Alpha-blocker) is tried first before finasteride (in general).

However, finasteride is of choice if there are lower urinary tract symptoms + WITH prostate enlargement (> 30 grams) ± WITH ↑ PSA > 1.4".

Key  
70

## The Management of the Ureteric Colic (Pain caused by ureteric stones)

### • Description of Pain:

Sudden unilateral, spasmodic colicky pain, at flank/ loin, can radiate to groin and testicle. The patient cannot lie still (move around; severe pain).

### • Management of Ureteric Colic: (Imp v)

✓ **FIRST LINE** → **NSAIDs** (particularly **Diclofenac**: Parenteral, oral or rectal).

✓ If NSAIDs is contraindicated or ineffective → **Add Paracetamol** (Preferred **IV**).

✓ If both NSAIDs + Paracetamol are ineffective or contraindicated → **Opioids** (eg, **tramadol**).

(NOTE: Antispasmodics are not recommended for ureteric colic).

Key  
71

### **Suprapubic Catheterization.**

- It can be used for long-term bladder drainage or in emergency conditions where the obstruction is below the level of bladder (eg, urethra).

- Urethral catheterisation is attempted first, but if fails, suprapubic catheterisation is attempted.

#### **Example:**

**A man with urine retention (unable to pass urine) due to enlarged prostate. Urethral catheterisation has failed.**

Next step → **Suprapubic catheterisation.**

Key  
72**Quick Comparison**

There are **shared symptoms** between **overactive bladder** (urge) and benign **prostatic hyperplasia (BPH)** such as (Nocturia, and urinary frequency).

**However**, the symptoms of (terminal dribbling, feeling of incomplete voiding, having to strain in order to start urination) are of **BPH** even if PSA is normal,

▣ **The management of Overactive Bladder (Urge Incontinence):**

✓ **Bladder drill (Retraining)** → gradually increase the periods between voiding.

✓ If medications are needed:

→ **Antimuscarinic = Anti-cholinergic**.

(eg, immediate release **Oxybutynin**, **Tolterodine**).

If associated arrhythmia or cardiovascular conditions → **Mirabegron**.

(Note, Duloxetine is one line in Rx of stress incontinence, not urge incontinence. It can be used if the pelvic floor exercise and surgery failed).

▣ **The management of Benign Prostatic Hyperplasia (BPH):**

- **Tamsulosin (Alpha-1 blocker)** is tried first before finasteride (in general).
- However, **Finasteride (5-alpha-reductase inhibitor)** is of choice if there are lower urinary tract symptoms + WITH prostate enlargement (> 30 grams) ± or ↑ PSA > 1.4".

Also, since finasteride can cause erectile dysfunction, they should be avoided if the patient has erectile issues.

Key  
73

## **Erectile Dysfunction (Impotence)**

■ Inability to obtain or maintain an erection sufficient for satisfactory sexual performance. Generally seen in men 40-70 years old.

### ■ **Causes:**

#### ■ **Vascular insufficiency:**

Examples → Diabetes mellitus, hypertension, hyperlipidemia, smoking.

#### ■ **Psychosexual:**

Examples → Depression, anxiety, stress, relationship issues.

Other supportive history points → sudden onset, early collapse of erection, erection when alone or with one partner but no erection with another partner.

#### ■ **Hormonal:** Hypogonadism (low testosterone level).

#### ■ **Drugs:** Examples → Antidepressants, Finasteride.

#### ■ **Trauma:**

Examples → Pelvic fractures, spinal cord injuries, penile fractures.

#### ■ **Neurogenic**

A rare cause. Examples → Multiple sclerosis (MS), Parkinson's disease.

### Investigations:

- ▣ Check for **diabetes** → Fasting glucose.
- ▣ Check for **testosterone deficiency** → Early morning sample of testosterone.
- ▣ Check for **hyperlipidemia** → Lipid profile.

### The Main Lines of Management:

- ▣ **Sildenafil (Viagra)**.

Sildenafil is an oral phosphodiesterase inhibitor. It works by releasing nitric oxide (NO) leading to vasodilation of the penile arterioles and increasing arterial inflow.

- ▣ **Psychosexual therapy** (if there are relationship issues, stress, anxiety).

### Example (1):

A 53-year-old man presents to the GP surgery complaining of an inability to achieve a firm erection. He has hypertension and type 2 diabetes. He is on enalapril, metformin and gliclazide. He has no history of trauma. He has no relationship issues with his wife. His blood pressure is 133/89 mmHg. His testosterone level is normal. His HbA1c is 51 mmol/mol. His digital rectal examination is unremarkable. What is the most appropriate management?

→ **Sildenafil (Viagra)** = Oral phosphodiesterase inhibitors.

He has DM and hypertension which can cause vascular erectile dysfunction.

Other reasons are denied, particularly the psychosexual cause as he has no relationship issue, stress, depression or anxiety.

### Example (2):

A 52-year-old man presents to the GP surgery complaining of an inability to achieve a firm erection. His medical history is unremarkable. He has no history of trauma. He tells you that he has erectile dysfunction when he is with one partner but he is all fine with another partner. He also has no issues with erections and masturbation without the partner. His blood pressure is 125/80 mmHg. His testosterone level is normal. His HbA1c is 35 mmol/mol. His digital rectal examination is unremarkable. What is the most appropriate management?

→ **Psychosexual therapy.**

It is clear that the problem is psychosexual as he can achieve erection with one partner and when alone but fails when with the other partner.

No other reasons are there (no vascular eg, DM, HTN), no trauma, normal testosterone level.

So, psychosexual therapy is tried first in this case.

Key  
74

### **Differentiating Testicular Torsion from Epididymo-orchitis**

**Clinically**, it is very difficult to differentiate. However, here are some important points to remember:

- The pain in testicular torsion is NOT eased by elevation, while in epididymo-orchitis, the pain is relieved by elevating the testis.



- The pain in testicular torsion is felt at the testicle itself while the pain in epididymo-orchitis is usually confined to the epididymis.

- The symptoms in epididymo-orchitis are gradual if compared to the sudden acute onset of testicular torsion.

- In epididymo orchitis, there may be a history of multiple sexual partners (sexually active male), dysuria (painful urination), urethral discharge.

- In epididymo orchitis, the affected testis is often retracted (higher location).

**Note:** Both conditions can present with or without fever.

- If suspected testicular torsion → Urgent exploratory surgery (to save testis).

- If epididymo-orchitis → Antibiotics.

Key  
75

### Notes on Renal Cysts

- Renal cysts are either simple or complex.

- Most simple cysts are small and asymptomatic.

- They can be found incidentally (for example, during investigations by imaging as in ultrasound for liver or gallbladder for right upper quadrant pain).

- Small simple cyst that does not cause flank or loin pain can be left alone:

→ Reassure (no further follow up required).

- In rare cases when the cyst is thought to be the cause of loin or flank pain, it can be managed by percutaneous aspiration or laparoscopic surgical excision of the cyst wall.

Key 76	<p>What is the most appropriate [INITIAL] test for urinary tract infections?</p> <p>→ <b>Urinalysis</b>.</p>
Key 77	<p>A 52-year-old man presents with a 2-week history of itchiness, swelling, and redness of his glans penis (ie, balanitis). There is urinary frequency but no dysuria. He reports having similar episodes over the past year. He denies having sexual activity in the past 6 months. Upon examination, the glans penis is erythematous and with some superficial fissures. What is the immediate investigation?</p> <p>→ <b>Check fasting blood sugar</b>.</p> <p>Another valid answer → <b>HbA1c</b>.</p> <p><b>Recurrent fungal infections</b> (balanitis) + Increased urination frequency → Suspect a systemic <b>disease</b> such as diabetes and check <b>FBG/ HbA1c</b>.</p>
Key 78	<p><b>What is the diagnosis?</b></p> <p>A soft scrotal swelling that <u>reduces on lying down</u>, particularly more <u>prominent on one side</u>.</p> <p>→ <b>Varicocele</b>.</p>

Key  
79**Quick Urology Notes to Remember:**

✓ Rx of urge incontinence in old patients who have arrhythmia/ heart conditions → **Mirabegron** (safer than Oxybutynin and Tolterodine).

*Mirabegron is in a class of medications called beta-3 adrenergic agonists. It works by relaxing the bladder muscles.*

✓ Investigation for ureteric stones in “pregnant” females

→ **Ultrasound of KUB** (instead of CT KUB).

✓ If non-pregnant → **Non-contrast CT abdomen** (or **CT KUB**).

✓ The Initial investigation for suspected testicular cancer

→ **Ultrasound of the scrotum** (before considering tumour markers).

✓ Persistent, foul-smelling, brown vaginal discharge that has developed after pelvic surgery (eg, hysterectomy)

→ Think: a fi between bladder and vagina (**vesicovaginal fistula**).

✓ If renal calculi < 5 mm → **No intervention needed**. (↑ fluid, manage pain).

Key  
80

## Important Neuroanatomical Pathways

### Main Points:

- **Patient Profile:** 62-year-old man with erectile dysfunction for eight months; history of hypertension and diabetes.
- **Relevant Neuroanatomical Pathway** → **Hypothalamospinal tract**.
- **Function of Hypothalamospinal Tract:** Autonomic regulation of **erectile function, integration**, and transmission of signals from the hypothalamus to the spinal cord.
- **Impact of Dysfunction:** Disruption in this pathway can lead to erectile dysfunction eg, patients with conditions like hypertension or diabetes.

### Other Pathways:

- **Mesolimbic Pathway:** The mesolimbic pathway is mainly involved in **reward and pleasure** circuits, influencing motivation and addictive behaviors. It plays a role in sexual behavior, particularly in the context of reward and pleasure. However, it does not directly regulate the physiological processes of erection, which are controlled by the hypothalamospinal tract.
- **Nigrofrontal Pathway:** Associated with cognitive processes, no direct role in erection regulation.
- **Nigrostriatal Pathway:** Related to motor control, particularly in Parkinson's disease, not directly involved in erection function.

• **Cerebellothalamic Tract:** Involved in coordination and motor planning, not in autonomic regulation of erections.

Key  
81

## Urgent Referral for Unexplained Haematuria in $\geq 45$ Years

### ■ Patient Profile:

- 55-year-old woman.
- Reddish/pinkish urine for three days.
- Postmenopausal, no associated pain or changes in urinary habits.
- Urinalysis: blood  $\geq 3$ .

■ **Recommended Action:** → Urgent referral to urology (2-week wait referral).

### ■ Reasoning:

- NICE guidelines: Patients aged  $\geq 45$  years with unexplained visible haematuria and without UTI need a suspected cancer pathway referral.
- Ensures timely assessment and diagnosis of potential serious conditions like renal or bladder cancer.

### ■ Other Options Less Appropriate:

- **Ultrasound of kidney, ureter, and bladder:** Good for initial investigation but less comprehensive than specialist referral, particularly in patients  $\geq 45$  with unexplained haematuria and no infection.

- **Pelvic ultrasound:** Evaluates reproductive organs but not the entire urinary tract.
- **Antibiotics:** Inappropriate without evidence of infection.
- **Full blood count and coagulation profile:** Useful but secondary to ruling out malignancies.

## Key 82 Critical Study Scenario

A 59-year-old man presents to his GP with a one-month history of painless haematuria. He also reports a dull, persistent ache in his left flank but denies any dysuria or changes in urinary frequency. There is no history of trauma. He mentions a recent loss of appetite and unexplained weight loss over the last few months. His past medical history is unremarkable.

What is the most likely diagnosis?

- A) Renal stone.
- B) Bladder cancer.
- C) Ureteric stricture.
- D) Pyelonephritis.
- E) Renal cancer.

Answer → **E) Renal cancer.**

**Explanation:**

The combination of **painless haematuria**, a **flank ache**, and **unintentional weight loss** strongly suggests **renal cancer**. Although **bladder cancer** can also present with painless haematuria, the presence of a dull flank ache and systemic symptoms such as weight loss points more towards a renal origin.

- **Renal stones** typically present with more acute, severe, and colicky pain rather than a dull ache, often accompanied by haematuria but usually with a history of stone formation.
- **Pyelonephritis** would generally present with fever, chills, and signs of infection, which are absent in this case.
- **Ureteric strictures** are usually associated with obstructive symptoms like difficulty in passing urine or renal colic, neither of which are present here.

Thus, the constellation of painless haematuria, dull flank pain, and weight loss makes **renal cancer** the most likely diagnosis.

Key  
83**Quick Notes (Mirabegron).**

- Mirabegron is a beta 3-agonist. It relaxes detrusor muscle.

- **When is Mirabegron used in urge incontinence?**

✓ After trying the **first-line** Rx for urge incontinence (which is **bladder training**) and **antimuscarinic** (eg, **oxybutynin**, **tolterodine**) with no improvement.

✓ Also, it is recommended if the patient with urge incontinence has associated **arrhythmia** or **cardiovascular conditions**.

(**Mirabegron** is preferred over oxybutynin in cases with **arrhythmia**).

**Note:** Pelvic-floor exercises is the first-line Rx for stress incontinence, whereas bladder training is the first-line Rx for urge incontinence.

Key  
84**Overflow Incontinence**

- **Definition:** Overflow incontinence occurs when the **bladder cannot empty fully**, causing **frequent dribbling** of urine due to the build-up of **retained urine**.
- **Causes:**
  - **Bladder outlet obstruction** (e.g., enlarged prostate, urethral stricture, bladder stones).



- **Weakened bladder muscles**, often seen in conditions like diabetes or spinal cord injuries.
- **Nerve damage**: Conditions such as multiple sclerosis or injuries that affect bladder control.

- **Symptoms:**

- **Constant dribbling** of urine.
- Sensation of **incomplete bladder emptying**.
- Frequent urination with small amounts of urine.
- Possible **distended palpable bladder** on examination.

- **Complications**: Risk of **urinary tract infections (UTIs)**, kidney damage, or bladder damage due to prolonged retention.

- **Management of Overflow Incontinence:**

- ✓ **Catheterisation**: First-line and immediate management. This is because Immediate bladder emptying to prevent damage and infections and to relieve symptoms.
- ✓ **Treat underlying cause:**
  - For **prostatic enlargement**: Alpha-blockers or 5-alpha-reductase inhibitors.

- For **nerve-related issues**: Address the neurological condition, if possible, with possible use of intermittent self-catheterisation.

✓ **Medication:**

- **Alpha-blockers**: For reducing bladder outlet resistance in cases like enlarged prostate.
- **Bethanechol**: Sometimes used to stimulate bladder muscle contractions (rare).

✓ **Bladder retraining**: In mild cases, this can help regain bladder control.

✓ **Surgery**: May be needed for severe cases, such as **prostate surgery** for enlarged prostate or removal of bladder stones.

✓ **Regular follow-up**: Monitoring for infections, kidney function, and bladder health.

• **Scenario:**

A 65-year-old woman presents to her GP with a three-month history of urinary leakage and a feeling of incomplete bladder emptying. She reports having to use incontinence pads, which are often soaked within two hours. Additionally, she has recently noticed discomfort and redness around her groin area. On examination, there is significant erythema and some raw areas of skin in the perineal region. Her bladder is palpable and distended, and she describes the

sensation of not fully emptying her bladder after urination. What is the most appropriate initial management for this patient?

- A) Prescribe a topical cream to manage skin irritation.
- B) Refer for pelvic floor exercises.
- C) Start an anticholinergic to manage symptoms.
- D) Arrange for catheterisation.
- E) Request an urgent bladder ultrasound.

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**Answer:**

The correct answer is → **D) Arrange for catheterisation.**

This patient is experiencing **chronic urinary retention** with **overflow incontinence**, as indicated by the distended bladder and the sensation of incomplete bladder emptying. These symptoms suggest that there is a significant amount of retained urine, which is likely the cause of the overflow incontinence. Immediate relief of the urinary retention is essential to prevent further complications such as infections or bladder damage. **Catheterisation** will relieve

the bladder and reduce the skin irritation caused by leakage, as it will decrease the persistent moisture around the perineal area.

■ **Explanation of other Important options:**

**A) Prescribe a topical cream to manage skin irritation.**

While topical creams may provide temporary relief for the skin irritation caused by urine leakage, they do not address the underlying cause, which is urinary retention. This option does not offer a long-term solution to the problem.

**B) Refer for pelvic floor exercises.**

Pelvic floor exercises are helpful for **stress incontinence**, not for overflow incontinence due to urinary retention. This patient needs immediate intervention for her full bladder rather than exercises that would not provide instant relief.

**C) Start an anticholinergic to manage symptoms.**

Anticholinergic medications are used to treat an **overactive bladder** and **urge incontinence**, not for overflow incontinence due to retention. They could worsen urinary retention in this scenario, making them an inappropriate choice.

**E) Request an urgent bladder ultrasound.**

	<p>While an ultrasound might help to determine the underlying cause of the retention (e.g., obstruction, mass), it is not the most immediate step in managing this patient's symptoms. The priority is to relieve the retention through catheterisation, after which further investigations can be performed if needed.</p>

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